U. S. FOREST SERVICE

RESEARCH NOTE LS-39

LAKE STATES FOREST EXPERIMENT STATION • U. S. DEPARTMENT OF AGRICULTURE

Spruce Budworm Defoliation in Northeastern Minnesota Decreases in 1963

The 1963 aerial survey[1] for damage by the spruce budworm (*Choristoneura fumiferana* (Clem.)) in northeastern Minnesota showed a considerable decrease of noticeable current defoliation as compared to that recorded for 1961 (table 1, fig. 1)[2]. This has been brought about partly by the reduction, through mortality, of susceptible spruce-fir type. Also, large areas showed no appreciable defoliation for 1963 even where heavy defoliation had been recorded in previous years. Compared with 1961, the infestation in 1963 has retreated mostly along the eastern edge, with some retraction being noted along the southern edge. The western expansion of the infestation has also diminished.

An egg-mass survey indicated that generally light defoliation will occur in 1964, although continued heavy defoliation by the budworm can be expected on certain areas.

In addition to defoliation information, spruce-fir mortality resulting from past years of heavy budworm feeding was also mapped for the first time in 1963. Mortality classed as 10 to 50 percent of balsam fir trees was found on 112,200 acres of spruce-fir type and that classed as 51 to 100 percent on 130,700 acres (fig. 2).

[1] *The survey, conducted during July, was a cooperative effort by the Beltsville Forest Insect Laboratory, Superior National Forest, and Lake States Forest Experiment Station, all of the U.S. Forest Service, and by the Minnesota Department of Agriculture, Division of Plant Industry.*

[2] *Batzer, H. O., and Bean, J. L. Spruce budworm defoliation causes continued top killing and tree mortality in northeastern Minnesota. U.S. Forest Serv., Lake States Forest Expt. Sta. Tech. Note 621, 2 pp. 1962.*

TABLE 1. — *Defoliation of spruce-fir type by the spruce budworm in northeastern Minnesota*

Current defoliation	1961		1963	
	Acres	Percent of total	Acres	Percent of total
None-to-light	428,600	42	611,000	71
Moderate-to-heavy	366,300	35	130,600	15
Severe	240,800	23	116,200	14

April 1964

STEPHEN O. RYAN
Area Entomologist
Superior National Forest
HAROLD O. BATZER
Entomologist
Lake States Forest Experiment Station

MAINTAINED AT ST. PAUL 1, MINNESOTA, IN COOPERATION WITH THE UNIVERSITY OF MINNESOTA

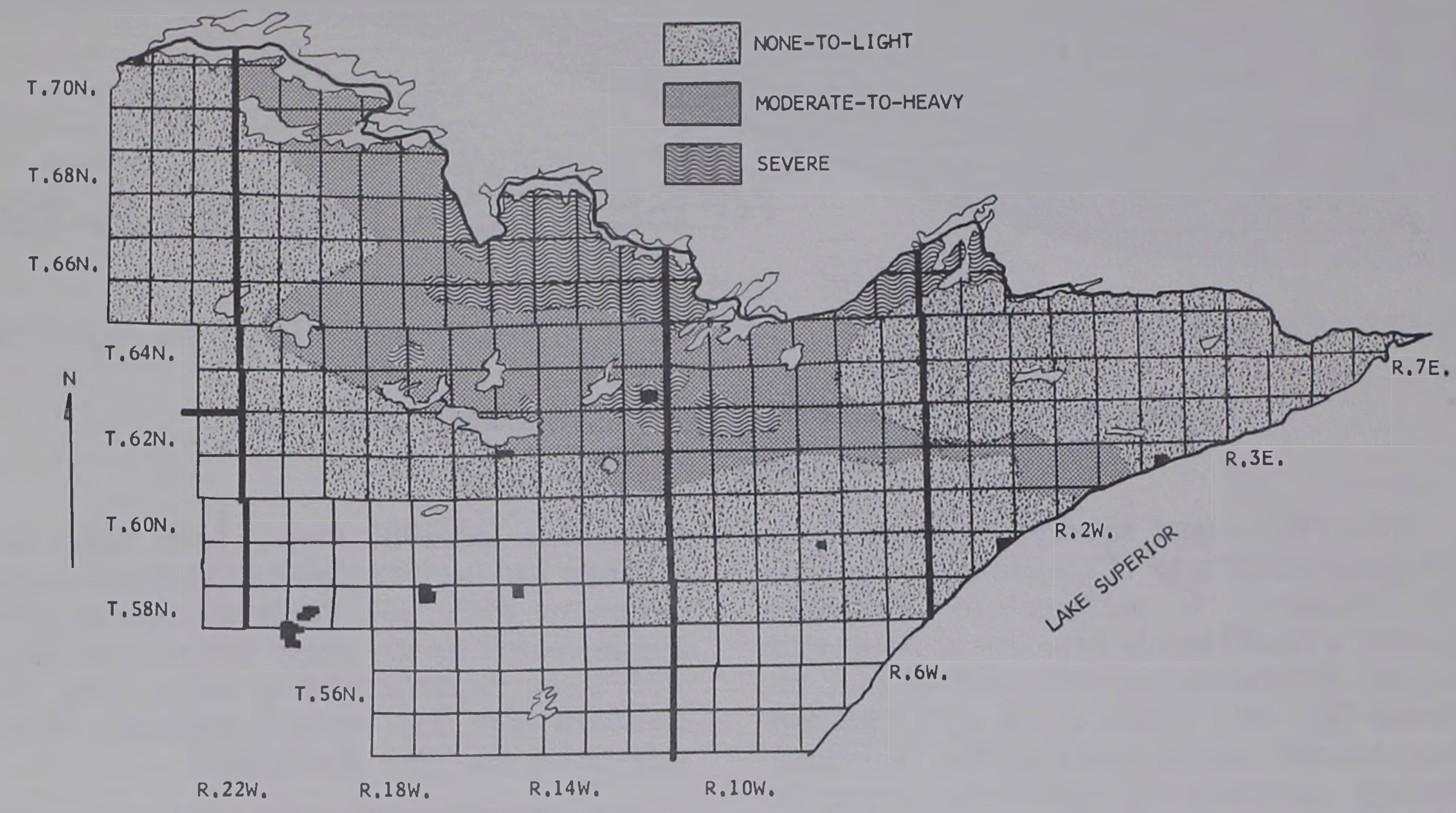

FIGURE 1. — Spruce budworm defoliation in northeastern Minnesota based on the 1963 aerial survey. Zones show degree of current defoliation of spruce-fir.

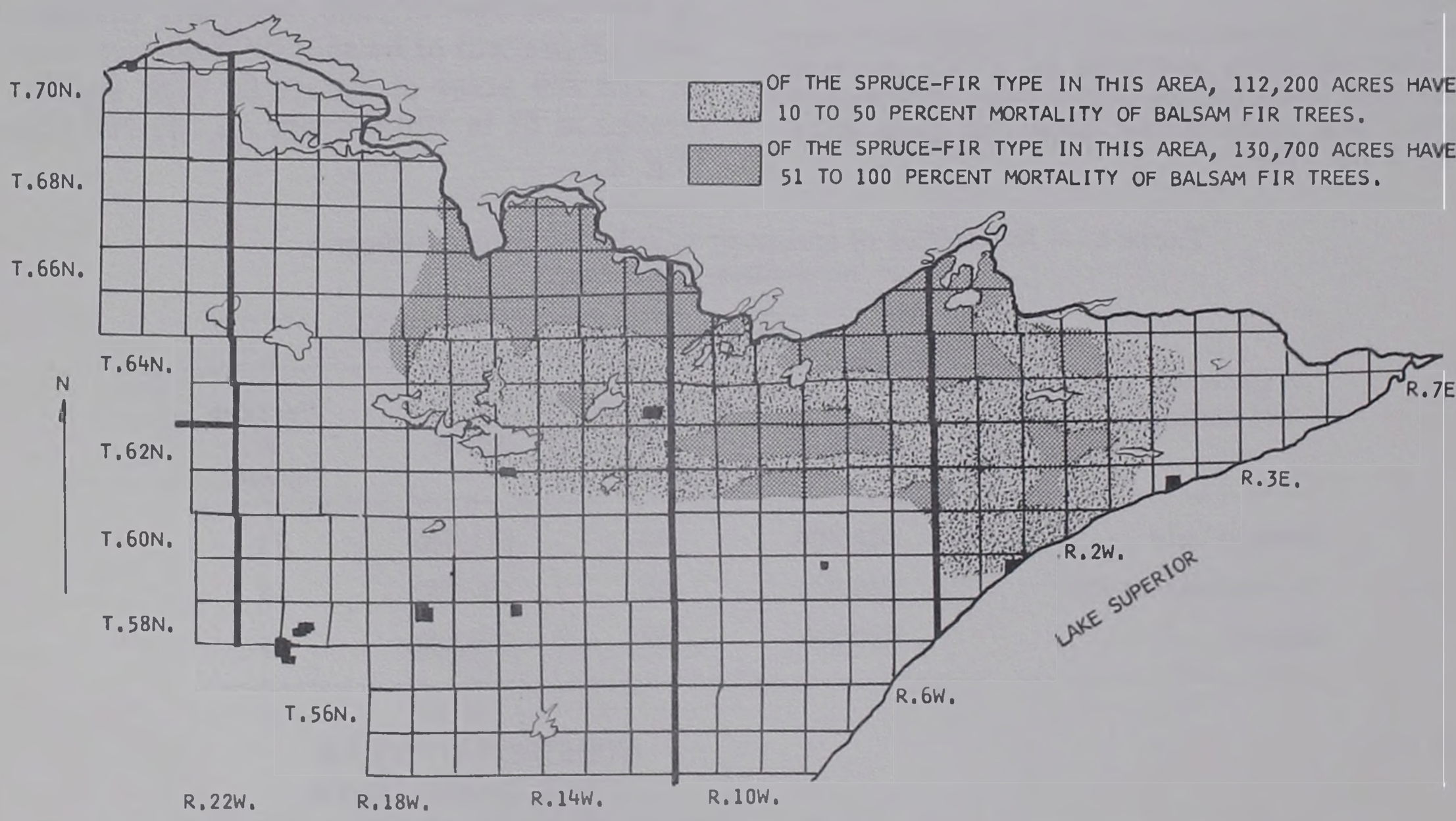

FIGURE 2. — Mortality of spruce-fir in northeastern Minnesota based on the 1963 aerial survey. Zones show degree of mortality.